ROHDE & SCHWARZ

BESCHREIBUNG

Instruction Book

MATCHING PADS

Type DAF

BN 18083
BN 18084
BN 18085

52

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1.)

Edition R 7252/261

(Translation of the German edition R 7177/1260)

Impedance transformation	60 Ω to 75 Ω or 75 Ω to 60 Ω
Attenuation with match-termination	4 db or 6 db, resp.
Frequency range	DC to 1000 Mc
VSWR with Dezifix B connectors	less than 1.05 up to 300 Mc less than 1.15 up to 1000 Mc
Attenuation accuracy	±0.1 db up to 300 Mc ±0.2 db up to 1000 Mc
Power-handling capacity	0.5 w
Connectors	Dezifix B at both ends; for screw-in connectors of other systems see page 12
Dimensions	105 mm x 50 mm dia.
Weight	350 g

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1. 2

Impedance transformation	50 Ω to 75 Ω or 75 Ω to 50 Ω
Attenuation with match-termination	4.2 db or 7.8 db, resp.
Frequency range	DC to 1000 Mc
VSWR with Dezifix B connectors	less than 1.05 up to 300 Mc less than 1.15 up to 1000 Mc
Attenuation accuracy	±0.1 db up to 300 Mc ±0.2 db up to 1000 Mc
Power-handling capacity	0.5 w
Connectors	Dezifix B at both ends; for screw-in connectors of other systems see page 12
Dimensions	105 mm x 50 mm dia.
Weight	350 g

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Bl. 3

Impedance transformation	50 Ω to 60 Ω or 60 Ω to 50 Ω
Attenuation with match-termination	4.2 db or 5.8 db, resp.
Frequency range	DC to 1000 Mc
VSWR with Dezifix B connectors	less than 1.05 up to 300 Mc less than 1.15 up to 1000 Mc
Power-handling capacity	0.5 w
Connectors	Dezifix B at both ends; for screw-in connectors of other systems see page 12
Dimensions	105 mm x 50 mm dia.
Weight	350 g

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Uses

The Matching Pads Type DAF are an excellent and often indispensable accessory for measurements where two or more instruments of different characteristic impedances must be matched to each other. The matching pads here function as impedance transformers. Although, compared to transformers, they present greater attenuation, they maintain their transmission characteristics in a much wider frequency range. While the frequency range of these matching pads extends from DC to 1000 Mc (more than $1:10^9$), good transformers cover a frequency band as small as about 1:10. On the other hand, the attenuation of the matching pads (4 to 7.8 db) is of minor importance in most measurements. In some cases it is even an advantage, for example, if decoupling is required in addition to the impedance transformation or if a section of accurately-known attenuation is called for. For example, if two matching pads BN 18083 are coupled at their 75-Ω connectors one obtains an attenuator pad of 60 Ω characteristic impedance and 4 + 6 = 10 db attenuation; coupled at their 60-Ω connectors they give an attenuator pad of 75 Ω characteristic impedance

and again 10 db attenuation. Examples of application are shown in Figs. 1 to 5.

Another advantage of these matching pads is that their connectors may be adapted to other connector systems. For example in Fig. 6 the lower side of the matching pad is provided with a 50-Ω socket of the UHF-Small-Single-Contact type. The exchanging of connectors can be carried out in a simple way without special tools: Unscrew the centre conductor 1 + 2 and the outer conductor 3 + 4 of the Dezifix connector and insert the desired screw-in connector instead. In Fig. 6 the screw-in socket FHD 10900/50, consisting of a centre and an outer conductor, is shown. A list of the screw-in connectors available at present is given on page 12.

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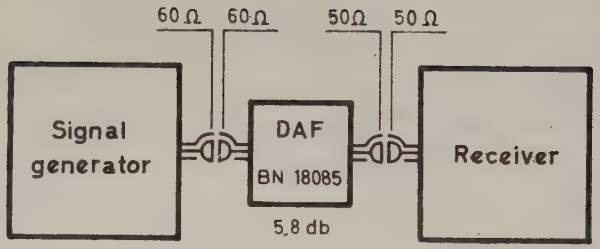
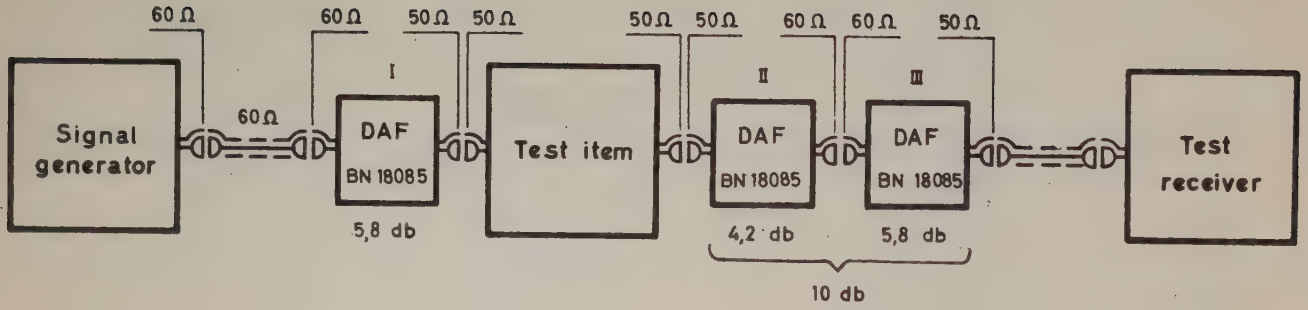


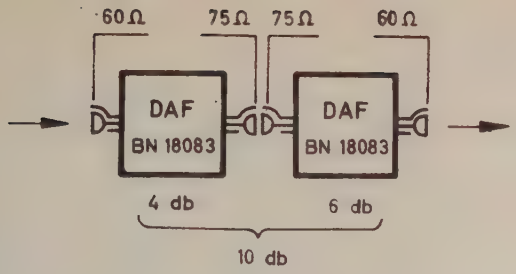
The matching pad BN 18085 used for impedance transformation from 60 Ω to 50 Ω

Fig. 1



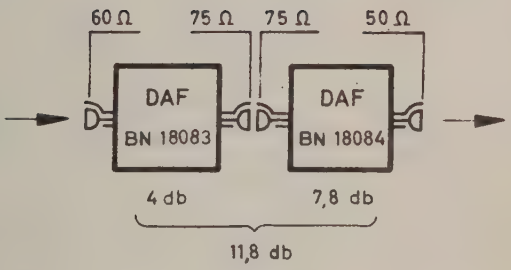
Frequency-response measurement:
DAF (I) provides for impedance transformation 60 Ω to 50 Ω, DAF (II) and DAF (III) form a 10-db attenuator pad, providing for an accurately-known load impedance of 50 Ω for the test item.

Fig. 2



Two matching pads BN 18083 form a 10-db attenuator pad of 60 Ω characteristic impedance. The same conditions prevail in the reverse direction

Fig. 3



The matching pads BN 18083 and BN 18084 form an impedance transformer 60 Ω to 50 Ω with 11.8 db attenuation. In the reverse direction the impedance transformation is 50 Ω to 60 Ω and the attenuation 4.2 + 6.0 = 10.2 db

Fig. 4

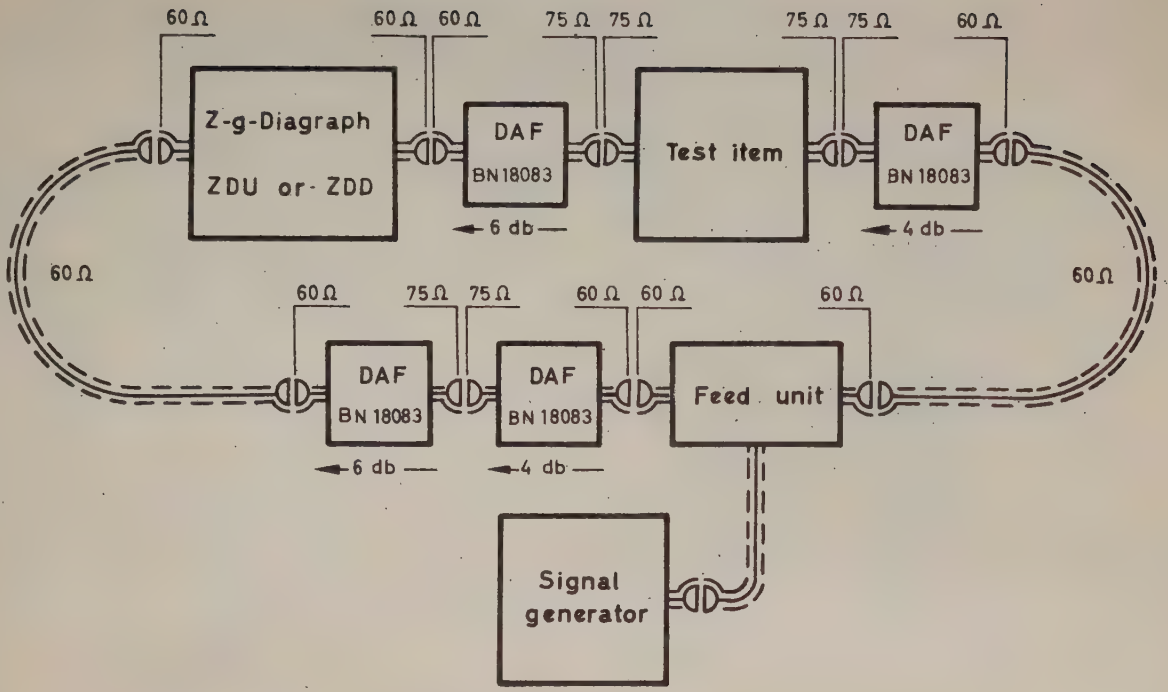
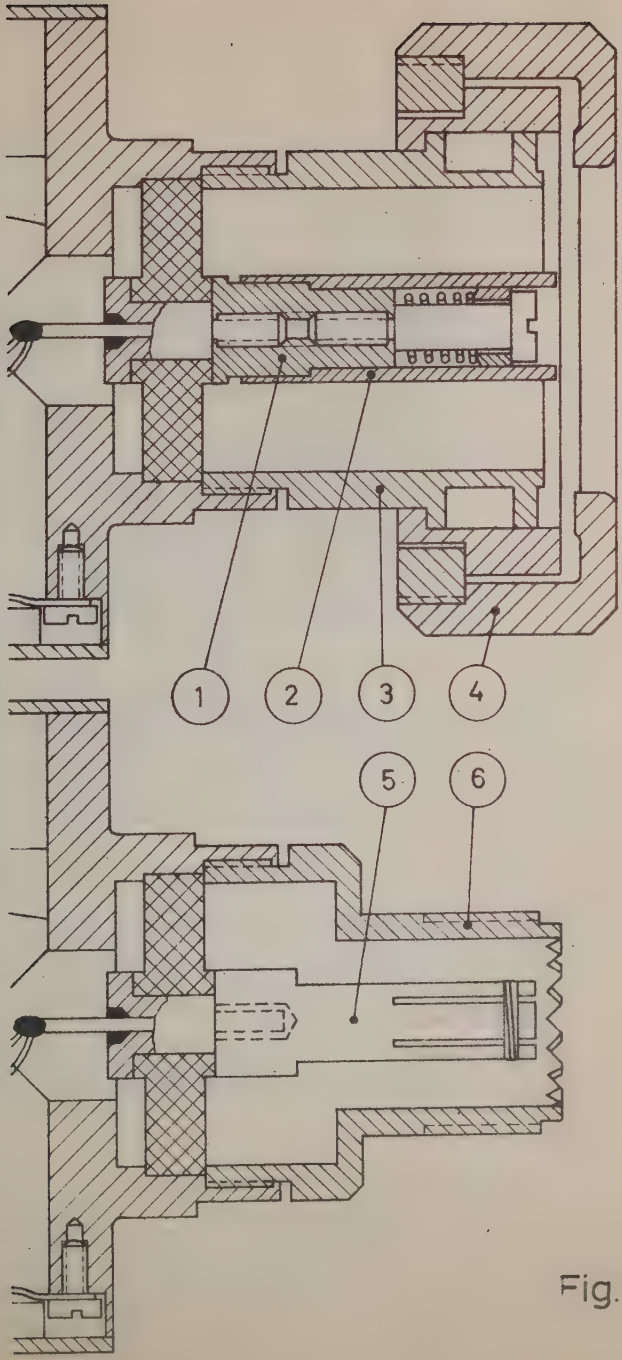


Fig. 5

Measurement of transfer constant:
Two Matching Pads Type DAF, providing 4 + 6 = 10 db attenuation, are inserted on each side between the Z-g Diagraph and the feed unit



Scale 2:1

Fig. 6

Order No.	Screw-in connector
FHD 10900/50	50-Ω socket UHF Small Single Contact
FHS 10900/50	50-Ω plug UHF Small Single Contact
FHD 20900/50	50-Ω socket Amphenol N
FHS 20900/50	50-Ω plug Amphenol N
FHD 30900/50	50-Ω socket Amphenol C
FHS 30900/50	50-Ω plug Amphenol C
FHD 40900/50	50-Ω socket Amphenol BNC
FHS 40900/50	50-Ω plug Amphenol BNC
FID 20900/50	50-Ω socket Spinner-Siemens 4,1/9,5
FIS 20900/50	50-Ω plug Spinner-Siemens 4,1/9,5
FID 40900/50	50-Ω socket Spinner-Siemens 7/16
FIS 40900/50	50-Ω plug Spinner-Siemens 7/16
FID 20900/60	60-Ω socket Spinner-Siemens 3,5/9,5
FIS 20900/60	60-Ω plug Spinner-Siemens 3,5/9,5
FID 40900/60	60-Ω socket Spinner-Siemens 6/16
FIS 40900/60	60-Ω plug Spinner-Siemens 6/16
FLA 20900/50	50-Ω socket General-Radio 874 B
FLB 20900/50	50-Ω socket Marconi H4

Construction

Each Matching Pad Type DAF comprises an attenuator with differing input and output impedances, made up of three 0.25-w resistors in Pi connection. The circuit arrangement and the values of the resistors are shown in Figs. 7, 8 and 9; the constructional design is shown in Fig. 10. Being unbalanced four-terminal networks, these matching pads present different attenuation in the two directions. Besides the direction of transformation, the corresponding attenuation should therefore be taken into account in measurements where this is necessary. The matching pads are so designed that, as far as possible, round attenuation values are obtained in both directions. This holds, in particular, when the equivalent connectors of two identical matching pads are coupled, as is done, for example, in Fig. 3.

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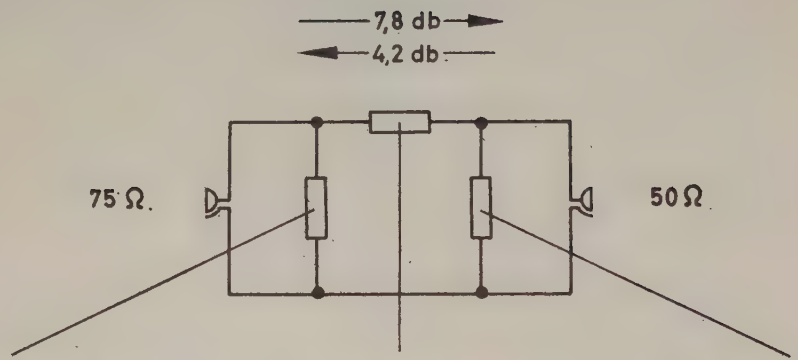
Ratings	871.4 Ω ±1 %/0.25 w	40.8 Ω ±1 %/0.25 w	132.3 Ω ±1 %/0.25 w
R&S Stock No.	WFS 1/871,4/1/0,25	WFS 1/40,8/1/0,25	WFS 1/132,3/1/0,25

Circuit and resistor values of BN 18083

Fig. 7



Ratings	2400 Ω ±1 %/0.25 w	45.74 Ω ±1 %/0.25 w	86.6 Ω ±1 %/0.25 w
R&S Stock No.	WFS 1/2,4 k/1/0,25	WFS 1/45,74/1/0,25	WFS 1/86,6/1/0,25

Circuit and resistor values of BN 18084

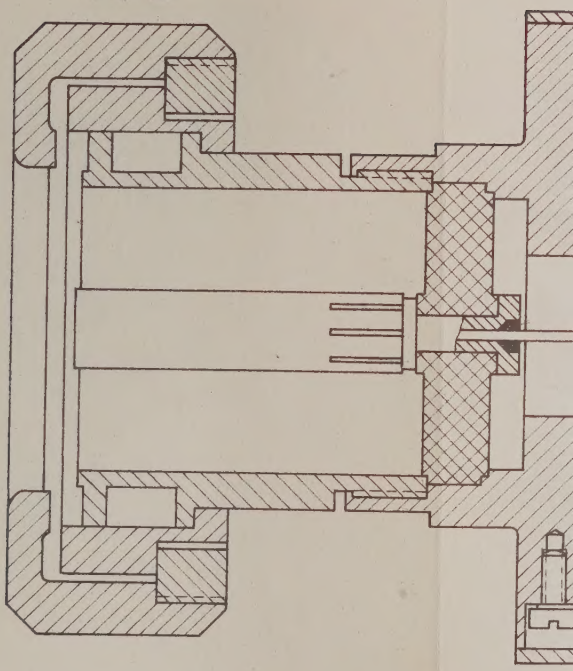
Fig. 8

Ratings	467,8 Ω ±1 %/0.25 W	33,3 Ω ±1 %/0.25 W	118.1 Ω ±1 %/0,25 W
R&S Stock No.	MFS 1/487,8/1/0,25	MFS 1/33,3/1/0,25	MFS 1/118,1/1/0,25

Circuit and resistor values of BN 18083

Fig. 9

75 Ω



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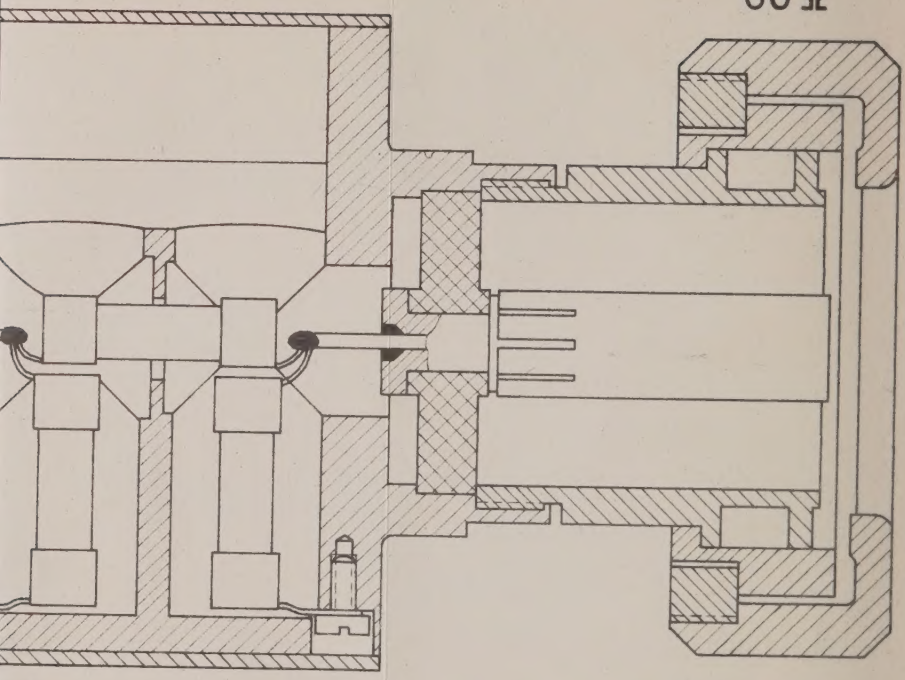
The models BN 18084
the three resistors

Scale 2:1



n of the matching pad BN 18083

nd BN 18085 differ only in the values of
nd in the dimensions of the centre conductor

Fig. 10

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